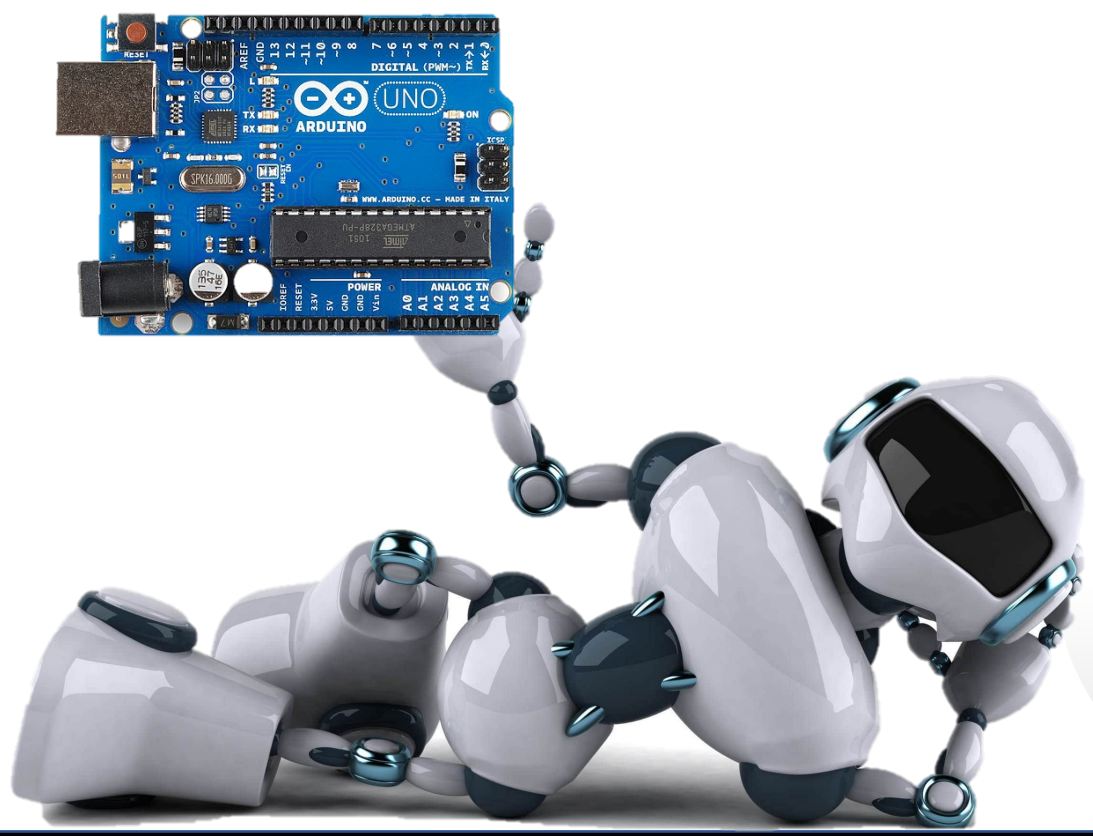
WHAT IS ROBOTICS?

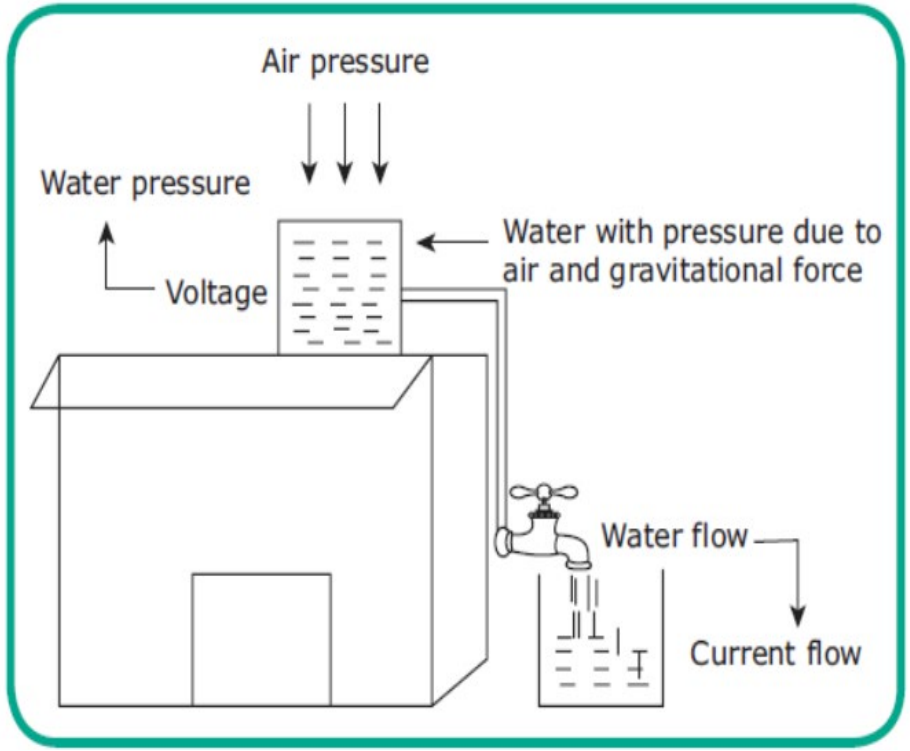


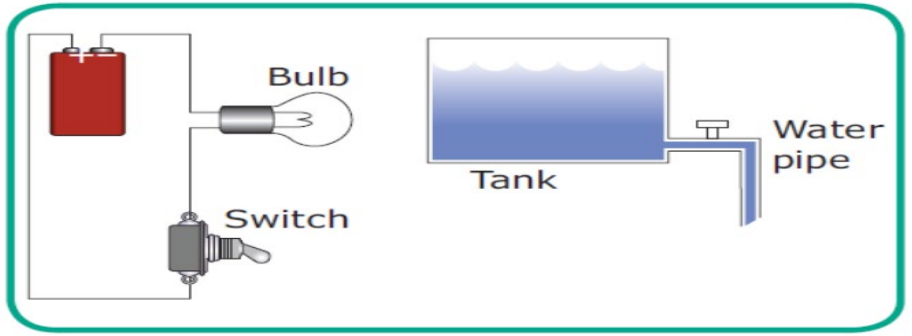
Science

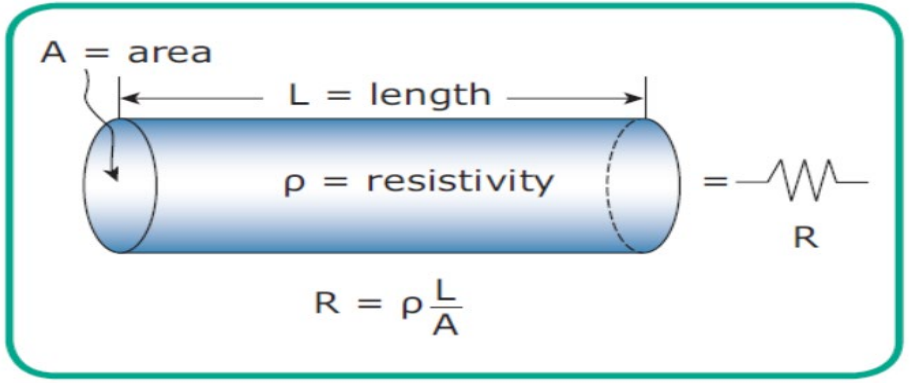
Technology

Engineering

ELECTRICITY







Current (I)

- Flow of electrons
- Measured in Ampere (A)

Voltage (V)

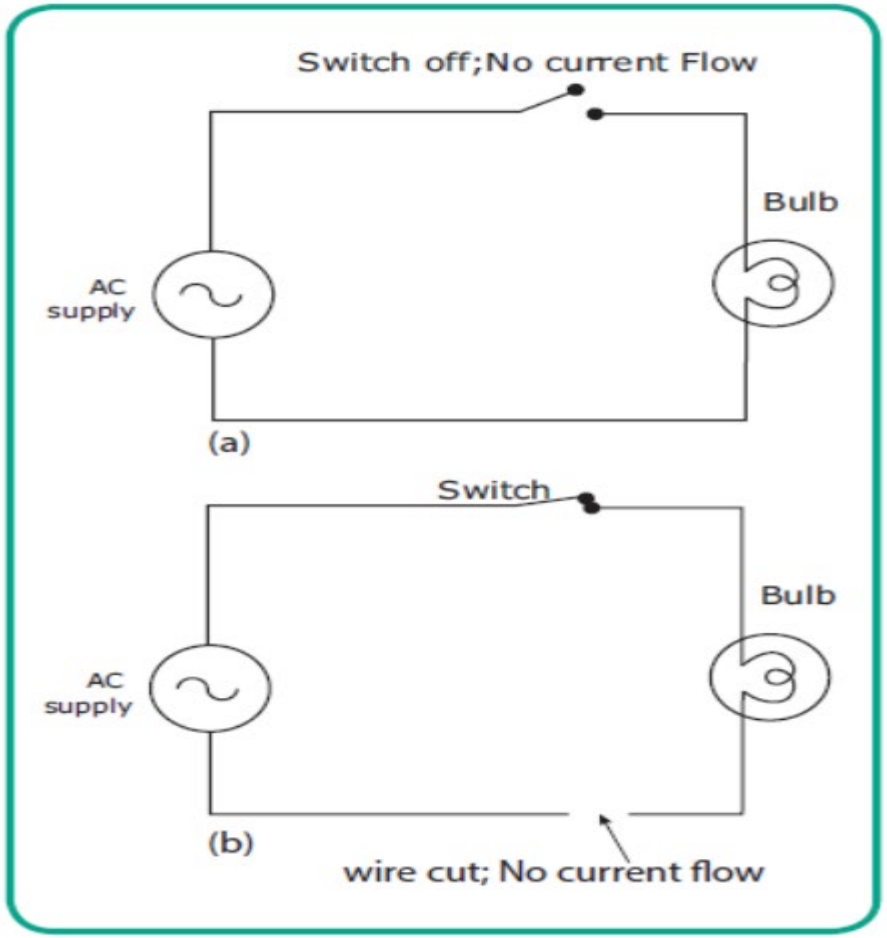
- Force to push the electrons
- Measured in Volts (V)

Resistance (R)

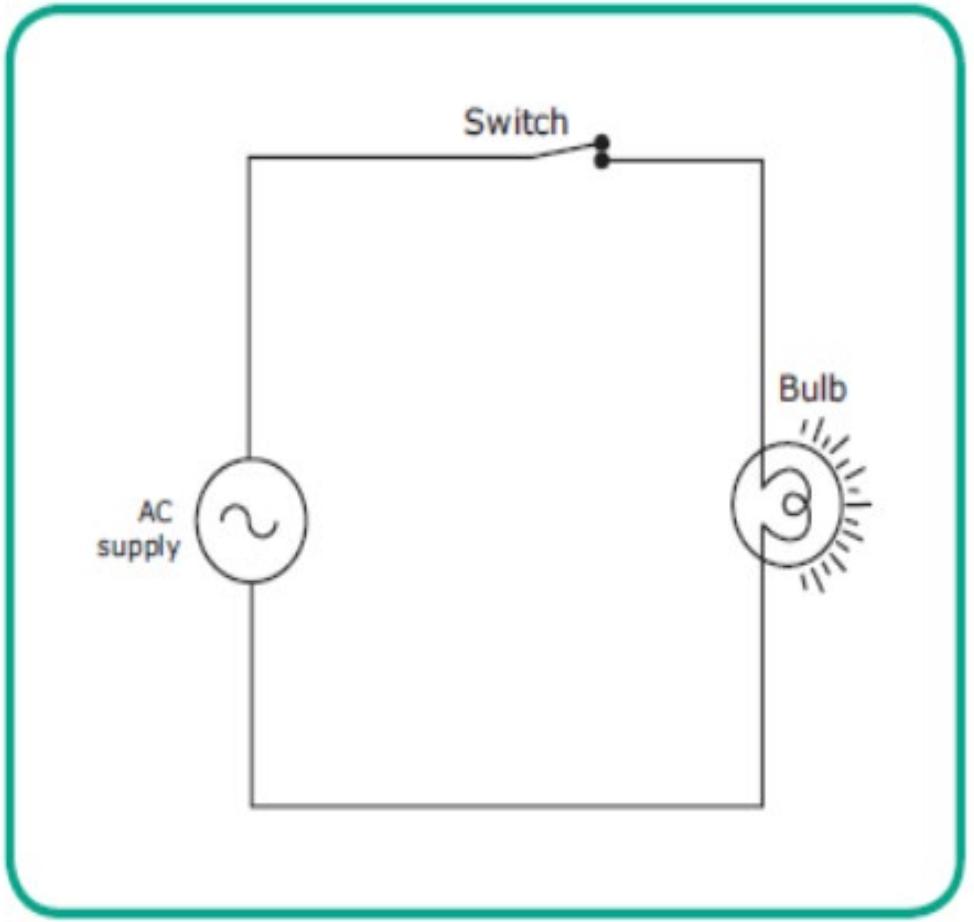
- Resistance to transfer the electrons through
- Measured in Ohms (Ω)

TYPES OF CIRCUITS

OPEN CIRCUIT



CLOSED CIRCUIT



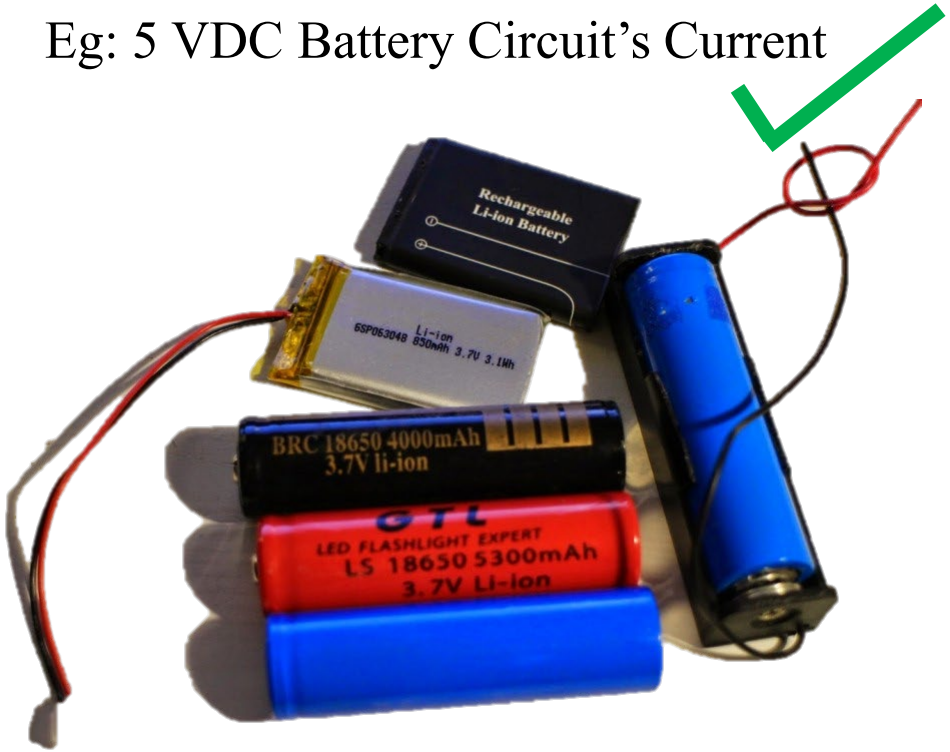
TYPES OF CURRENTS

AC CURRENT

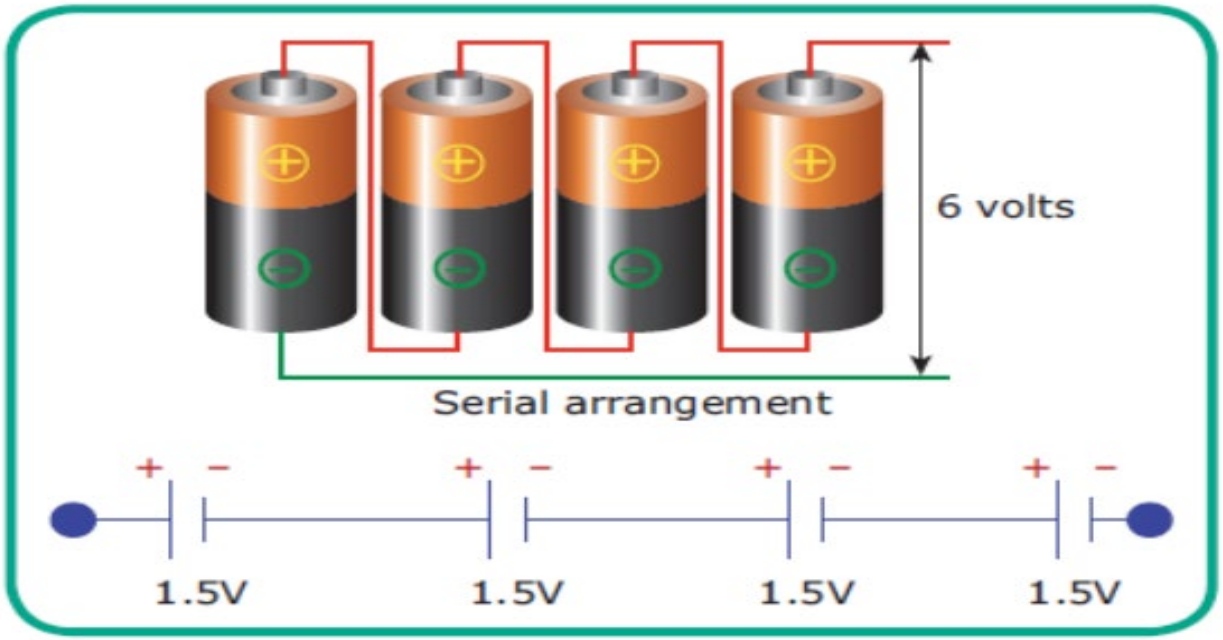
Flow in both directions
Eg: 240 VAC Home Supply's Current

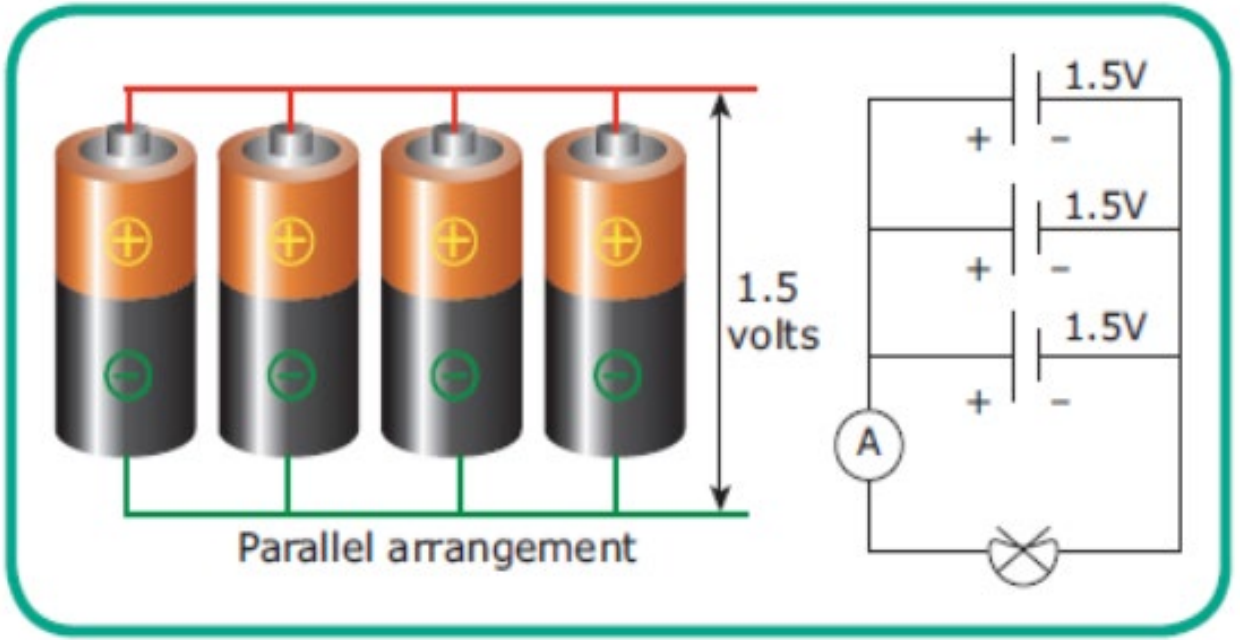
DC CURRENT

Flow in one direction
Eg: 5 VDC Battery Circuit's Current

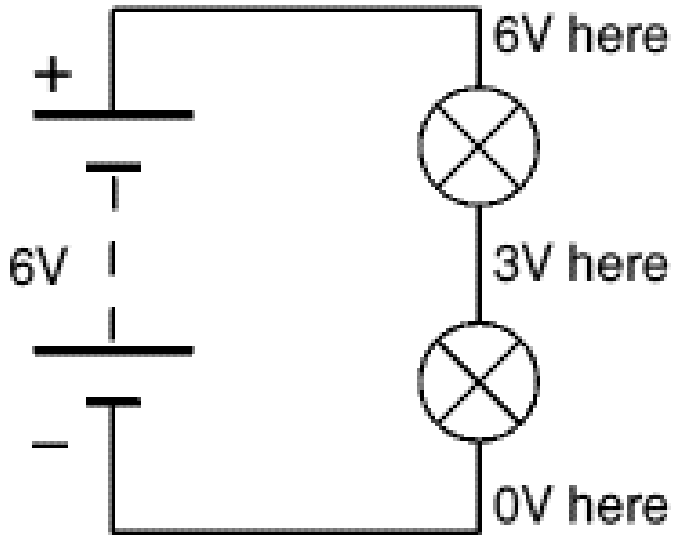


BATTERY ARRANGEMENTS

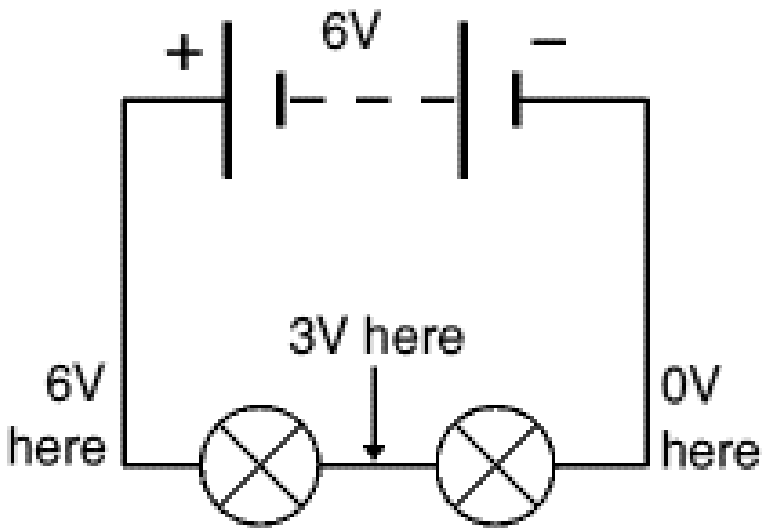




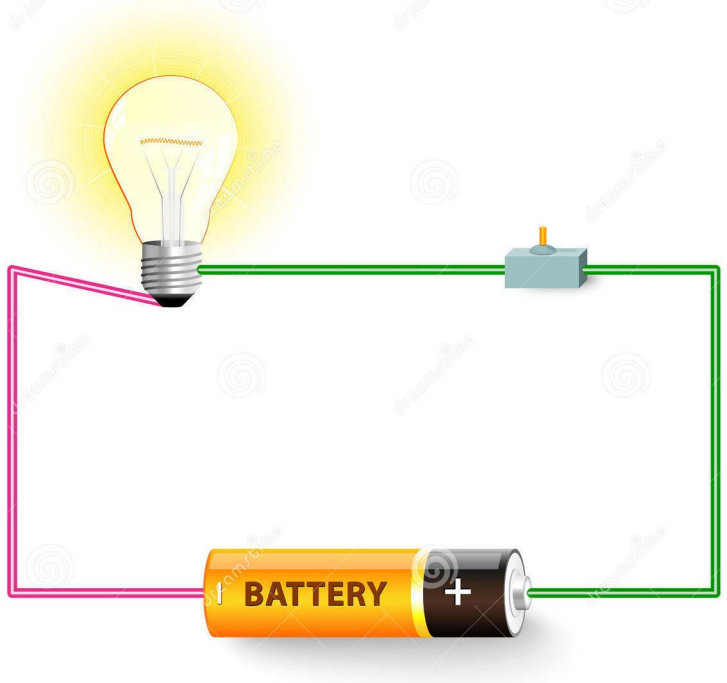
CIRCUIT DIAGRAMS



The electronics way
(+ at the top)



The science way
(battery at the top)

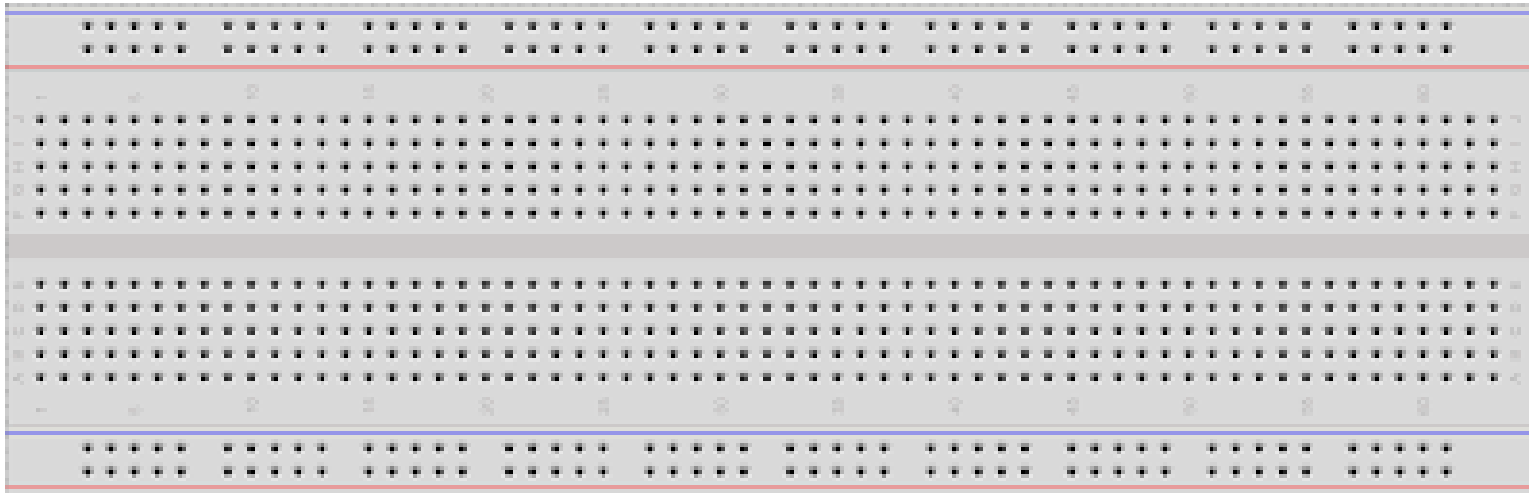


SAFETY FIRST!

- Never work on a circuit while power is applied.
- Do not connect power to a circuit until the circuit is finished and you have carefully checked your work.
- If you smell anything burning, immediately disconnect the power and examine your circuit to find out what went wrong.
- Keep your work area dry.
- Always wear safety goggles.
- Be careful around large capacitors; they can continue to hold voltage long after they are disconnected from power.
- Be especially careful when you solder because a hot soldering iron can easily burn you.
- Always work in a well-ventilated space.
- Have safety equipment such as a fire extinguisher, a first-aid kit, and a phone nearby.
- Don’t Work on AC Power Source (Home AC Supply Line)

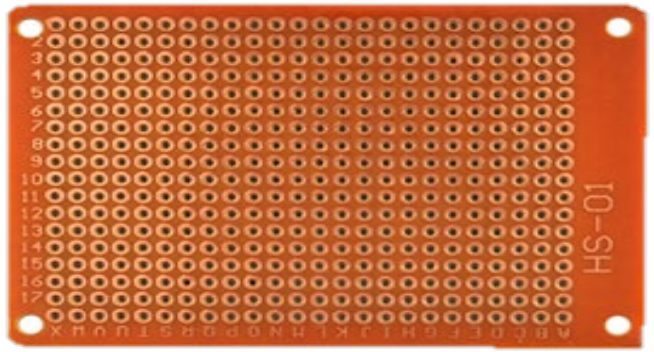
CIRCUIT BOARDS

Bread Board

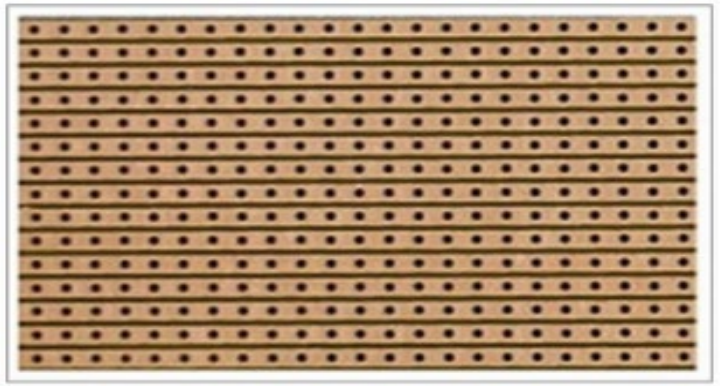


Permanent Mount - Soldering

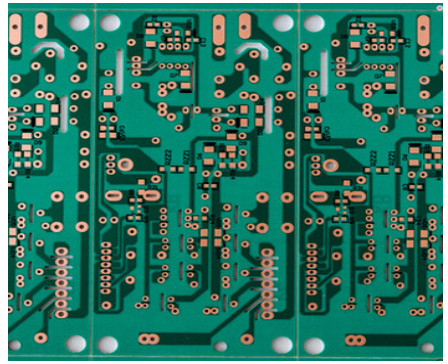
Dot Board



Line Board

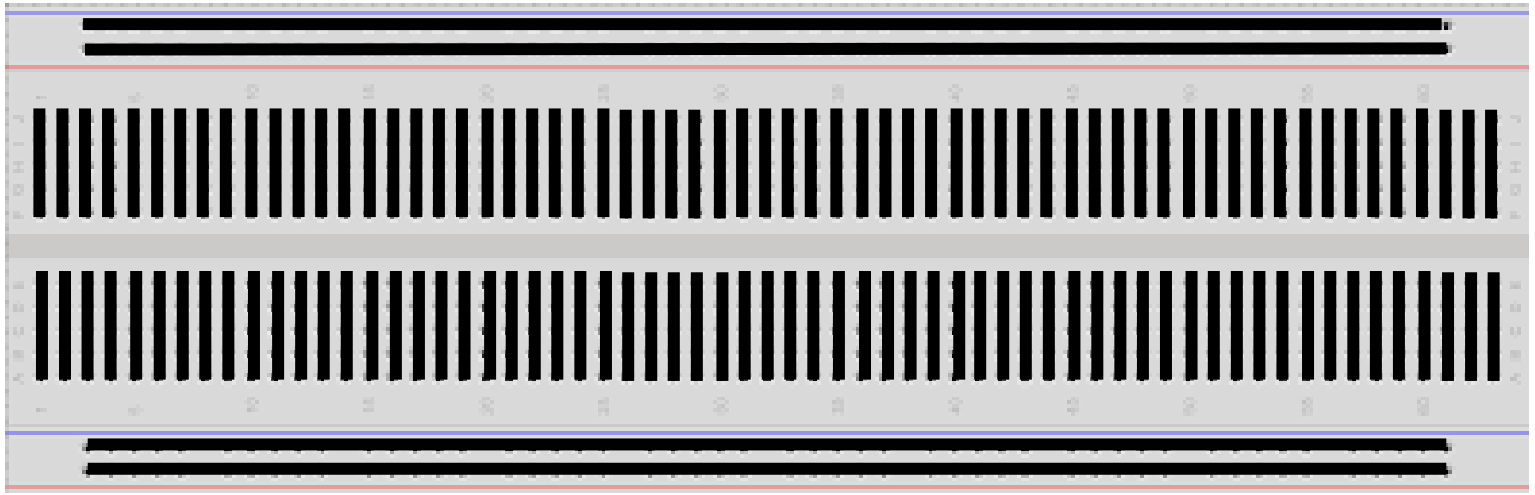


Printed Circuit Board (PCB)



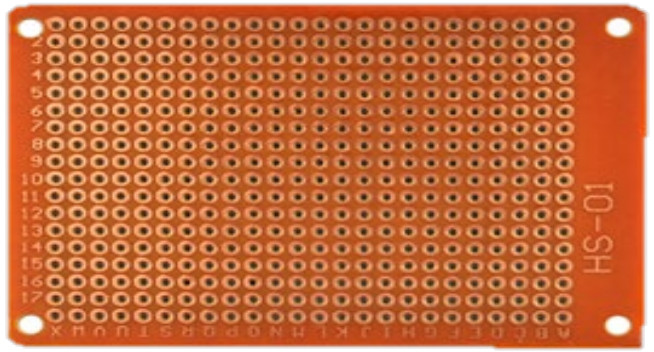
CIRCUIT BOARDS

Bread Board

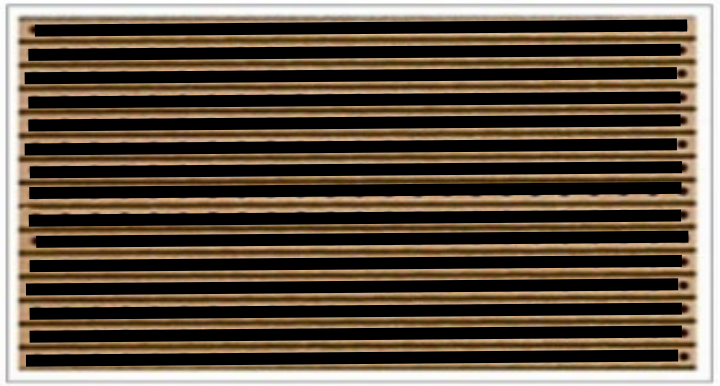


Permanent Mount - Soldering

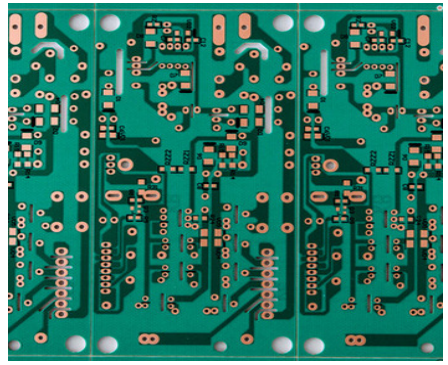
Dot Board



Line Board



Printed Circuit Board (PCB)



TYPES OF WIRES

Jumper Wires

Auto Wires